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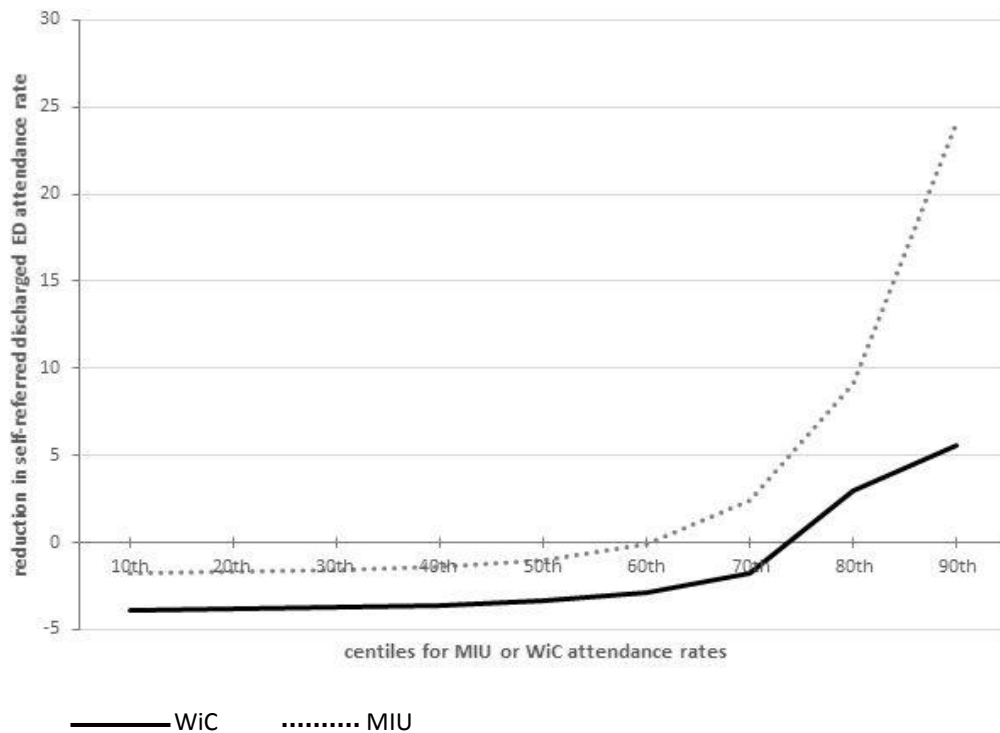
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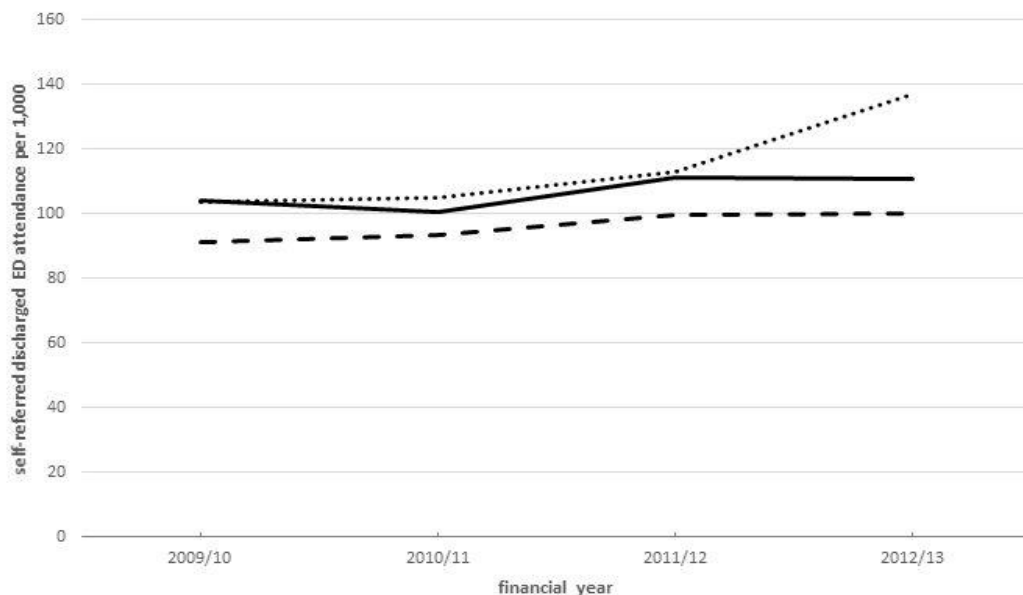
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Supplementary Figure 1: Net reduction in self-referred discharged ED attendance rate in relation to Minor Injuries Unit (MIU) or Walk-in Centre (WiC) attendance rates (see supplementary Table 1 for values of centiles).



Supplementary Figure 2: Local availability of alternative health care and self-referred discharged ED attendance rates.



- never Walk-in Centre (WiC) and Minor Injuries Unit (MIU) around
- ..... only WiC after 2009/10
- - only MIU after 2009/10

## Supplementary Box 1: Accident and Emergency (A&E) department types in England

A&E department types following the definitions used in the English National Health Service (NHS) data dictionary.

### **Type 1 A&E department (Major A&E)**

Emergency departments are a consultant led 24 hour service with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients.

### **Type 2 A&E department (Single Specialty)**

Consultant led mono specialty accident and emergency service (e.g. ophthalmology, dental) with designated accommodation for the reception of patients.

### **Type 3 A&E department (Other A&E / Minor Injury Unit)**

Other type of A&E/minor injury activity with designated accommodation for the reception of accident and emergency patients. The department may be doctor led or nurse led and treats at least minor injuries and illnesses and can be routinely accessed without appointment. Excludes NHS walk-in centres.

### **Type 4 A&E department**

NHS walk-in centres

Supplementary Table S1: Time average and time specific rates per 1,000 ED attendances of centiles in supplementary Figure 1.

Centiles	Walk-in Centres		Minor Injuries Units	
	<i>Time average</i>	<i>Time specific</i>	<i>Time average</i>	<i>Time specific</i>
10th	0.5	1.2	1.1	1.3
20th	0.8	1.6	1.5	1.6
30th	1.1	2.2	2.1	2.1
40th	1.7	3.2	3.0	2.7
50th	2.7	4.8	5.1	3.9
60th	5.0	7.9	10.0	6.7
70th	9.3	15.7	23.4	14.9
80th	17	30.4	44.8	40.7
90th	39.9	73.4	83.35	101.9

Supplementary Table 2. Estimates of B-coefficients from multilevel regression models for the association between general practice characteristics and socio-demographic profile of patients and ED attendance in England, 2009/10-2012/13.

	Model S1: time average predictors only		Model S2: including time specific predictors in addition to time average predictors		Model S3: including GPPS response rate, and local availability of MIU and WiC, in addition to predictors in model S2	
Fixed part	b-coef.	95% CI	b-coef.	95% CI	b-coef.	95% CI
Intercept	430.698***		430.279***		399.741***	
2010-11 ref. 2009-10	9.624***	8.691,10.557	9.965***	9.025,10.905	8.920***	7.949,9.890
2011-12 ref. 2009-10	16.070***	15.132,17.008	18.614***	17.462,19.766	17.124***	15.902,18.346
2012-13 ref. 2009-10	16.215***	15.283,17.146	19.801***	18.445,21.157	17.343***	15.885,18.801
Time specific pct. 65+			-0.041	-0.173,0.092	-0.125~	-0.259,0.009
Time average pct. 65+	0.627***	0.513,0.742	0.670***	0.495,0.845	0.851***	0.669,1.032
Time specific pct. female patients			-0.058	-0.182,0.066	-0.08	-0.203,0.044
Time average pct. female patients	0.319**	0.079,0.559	0.395**	0.126,0.665	0.441**	0.172,0.710
Time specific pct. UK-white patients			-0.07	-0.205,0.065	-0.063	-0.198,0.072
Time average pct. UK-white patients	-0.067~	-0.141,0.006	0.002	-0.152,0.155	0.036	-0.118,0.190
Time specific pct. unemployed patients			0.001	-0.222,0.223	-0.003	-0.225,0.219
Time average pct. unemployed patients	2.255***	1.880,2.630	2.239***	1.807,2.672	2.068***	1.634,2.503
Time specific pct. satisfied open hours			-0.101~	-0.213,0.011	-0.089	-0.201,0.022
Time average pct. satisfied open hours	-0.086	-0.214,0.043	0.014	-0.157,0.184	0.048	-0.122,0.218
Time specific pct. waited too long			0.105	-0.055,0.265	0.099	-0.061,0.259
Time average pct. waited too long	0.326***	0.191,0.460	0.218*	0.008,0.427	0.201~	-0.008,0.410
Time specific pct. had pref. GP			0.01	-0.068,0.088	0.014	-0.064,0.092
Time average pct. had pref. GP	-0.103***	-0.153,-0.054	-0.113*	-0.206,-0.021	-0.075	-0.168,0.018
Time specific pct. often spoke to pref. GP			-0.047	-0.110,0.017	-0.043	-0.106,0.021
Time average pct. often spoke to pref. GP	-0.011	-0.063,0.041	0.036	-0.046,0.118	0.016	-0.067,0.098
Time specific WiC attendance rate			0.004	-0.013,0.020	-0.011	-0.029,0.006
Time average WiC attendance rate	-0.221***	-0.278,-0.164	-0.226***	-0.286,-0.167	-0.226***	-0.285,-0.167
Time specific MIU attendance rate			-0.205***	-0.216,-0.193	-0.205***	-0.216,-0.194
Time average MIU attendance rate	-0.275***	-0.293,-0.257	-0.061***	-0.083,-0.040	-0.062***	-0.083,-0.040
Cities and towns ref. urban conurbation	4.037**	1.193,6.881	3.908**	1.063,6.753	4.457**	1.620,7.294
Rural areas ref. urban conurbation	-8.454***	-11.604,-5.303	-8.477***	-11.628,-5.325	-6.852***	-10.020,-3.684
Male life expectancy 2006/10	-4.795***	-5.226,-4.363	-4.823***	-5.254,-4.392	-4.399***	-4.846,-3.952
local availability of MIU					2.097***	1.071,3.123
local availability of WiC					4.010***	2.504,5.517
GPPS response rate					-0.395***	-0.503,-0.287
<b>Random components of variance</b>						
<i>PCT level:</i> Intercept	864.388***	666.374,1062.402	866.410***	667.584,1065.237	861.930***	664.492,1059.369
<i>General practice level:</i> Intercept	451.636***	430.321,472.950	463.993***	442.721,485.265	459.457***	438.344,480.571
<i>Year level:</i> Intercept	674.316***	660.750,687.882	631.182***	618.482,643.882	629.819***	617.146,642.492
<b>Statistics</b>						
N	26498		26498		26498	
deviance	257446.81		256189.77		256091.69	
Log likelihood	-128723.41		-128094.88		-128045.84	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, ~ p<0.1

Supplementary Table 3. Estimates of B-coefficients from multilevel regression models for the association between general practice characteristics and socio-demographic profile of patients and combined ED, MIU & WiC attendance in England, 2009/10-2012/13.

	Model S1: time average predictors only		Model S2: including GPPS response rate in addition to time average and time specific indicators	
<b>Fixed part</b>	b-coef.	95% CI	b-coef.	95% CI
Intercept	461.017***		421.933***	
2010-11 ref. 2009-10	12.279***	10.809,13.748	11.106***	9.550,12.662
2011-12 ref. 2009-10	33.081***	31.604,34.558	33.472***	31.620,35.325
2012-13 ref. 2009-10	43.380***	41.913,44.847	42.711***	40.518,44.905
Time specific pct. 65+			-0.129	-0.347,0.089
Time average pct. 65+	1.042***	0.879,1.206	1.285***	1.005,1.565
Time specific pct. female patients			-0.11	-0.312,0.091
Time average pct. female patients	0.449*	0.106,0.793	0.589**	0.192,0.986
Time specific pct. UK-white patients			-0.338**	-0.557,-0.119
Time average pct. UK-white patients	0.029	-0.076,0.135	0.419***	0.176,0.663
Time specific pct. unemployed patients			-0.085	-0.446,0.276
Time average pct. unemployed patients	3.065***	2.526,3.604	2.914***	2.265,3.564
Time specific pct. satisfied open hours			-0.260**	-0.441,-0.078
Time average pct. satisfied open hours	-0.155~	-0.339,0.028	0.158	-0.101,0.416
Time specific pct. waited too long			-0.033	-0.293,0.226
Time average pct. waited too long	0.506***	0.314,0.698	0.514**	0.190,0.837
Time specific pct. had pref. GP			0.05	-0.076,0.177
Time average pct. had pref. GP	-0.063	-0.134,0.008	-0.062	-0.208,0.084
Time specific pct. often spoke to pref. GP			0.027	-0.076,0.130
Time average pct. often spoke to pref. GP	-0.008	-0.082,0.067	-0.054	-0.182,0.074
Cities and towns ref. urban conurbation	-5.356**	-9.368,-1.345	-4.843*	-8.850,-0.836
Rural areas ref. urban conurbation	-18.299***	-22.751,-13.847	-16.329***	-20.821,-11.837
Male life expectancy 2006/10	-5.442***	-6.058,-4.826	-4.882***	-5.525,-4.238
GPPS response rate			-0.486***	-0.650,-0.322
<b>Random components of variance</b>				
<i>PCT level:</i> Intercept	1589.722***	1224.157,1955.286	1592.432***	1226.289,1958.576
<i>General practice level:</i> Intercept	833.743***	790.005,877.481	828.632***	785.077,872.187
<i>Year level:</i> Intercept	1676.937***	1643.222,1710.652	1675.020***	1641.344,1708.697
<b>Statistics</b>				
N	26498		26498	
deviance	280084.63		280031.5	
Log likelihood	-140042.31		-140015.75	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05, ~ p<0.1